

collected at Bolton, Massachusetts (*F. F. Forbes*) and at Townshend, Vermont (*L. A. Wheeler*).

At Paxton, June 10, 1933, I collected *Carex seorsa*; the first record for Worcester County.

Specimens have been placed in the Gray Herbarium.—EARL W. BEMIS, Worcester, Massachusetts.

NOTES ON THE FLORA OF THE STATE OF WASHINGTON—II

J. WILLIAM THOMPSON

IN the author's first paper¹ a few errors in the description of the new species of *Erigeron Thompsoni* Blake were detected too late to be included in the *Errata* of volume 34. They are:

Page 238, line 24. For *descrescentia*, read *decescentia*.

Page 239, line 3. For 2-6, read 2.6.

Line 4. For 3-8, read 3.8.

This paper is to deal with some new and interesting ranges of plants in this State which have been discovered in the course of exploration during the past two years.

FRITILLARIA CAMTSCHATCENSIS (L.) Ker-Gawler. Hultén² has recently given us an interesting account of this plant from its type locality. Abrams³ assigns it to "moist open woods, Canadian Zone; . . . along the coast to western Oregon." Mr. J. M. Grant gave the author a specimen from the "tide flats near Marysville," which locality seems incredible. Last summer the author found it in a mountain meadow back of the famous Big Four Inn, in the Cascade Mountains of Snohomish County, at about 1000 meters, *Thompson* 8778, which definitely places it in the Canadian Zone in open timber or in cold mountain bogs, in regions covered several feet deep in snow until early summer. There were 2-4 flowers on a stalk, averaging 3.

TRILLIUM PETIOLATUM Pursh. Piper⁴ cites collections of this peculiar *Trillium* from Spokane and Pullman, both in the extreme eastern part of Washington. The author has seen it in abundance along Catherine Creek near Union, Oregon. In 1931, while bota-

¹ RHODORA 34: 236 (1932).

² Eric Hultén. *Flora of Kamtchatka*, 1: 243 (1927).

³ Abrams. *Ill. Fl. Pac. States*, 1: 423 (1923).

⁴ Piper. *Flora of Washington*, 199 (1906).

nizing near Leavenworth, Chelan County, the author found it along a wooded creek bottom at the eastern base of Tumwater Mountain, *Thompson* 6444, which extended its range westward approximately 200 miles to the central part of the State.

CYPRIPEDIUM PARVIFLORUM Salisb. This widely distributed Lady's Slipper has been found and reported from near Spokane. In 1932, Mr. Chas. B. Fiker of Omak sent the author several specimens, *Fiker* 665, accompanied by the following ominous label which read: "In wet ground, in thickets, among poison ivy and rattlesnakes, protected from stock grazing, in the vicinity of Omak Lake, 15 May 1932." Mr. Fiker later told the author that a big rattler struck his boot while he was collecting this, and "for the sake of peace and safety" he had to kill the snake. The author thinks it is too bad that more of our rare plants do not use this method of protection from "mountain maggots (sheep)" and unscrupulous flower diggers! This station extends the range about 150 miles farther westward.

ISOPYRUM HALLII A. Gray. This interesting member of the Ranunculaceae was originally found along mountain streams in the foothills bordering the Willamette Valley, Oregon. The author has found it there twice: In the wooded gorge below the scenic Silver Creek Falls, Marion County, and at the head waters of Wilson River in Tillamook County. While on a brief trip just south of Elbe, Lewis County, the author found it in abundance along a stream at the foot of Storm King, and *Thompson* 8604 seems to constitute a first record for the State of Washington.

AQUILEGIA VULGARIS L. While making a trip to the northeast corner of Mount Rainier in 1931, the author noticed a peculiar *Aquilegia* growing along the newly made road through the deep firs and miles from the nearest residence. It seemed very plentiful and scattered along the roadside for several miles, and a generous collection of it was made. It proved a baffling case for an isolated botanist, and a specimen was submitted to Dr. Edgar Anderson who reported that it was apparently *A. vulgaris* \times *olympica*. This is an interesting find for both its pedigree and its unusual remote location along the new road to Yakima Park, Mount Rainier, near the entrance to the Park boundary, *Thompson* 7209. No other species of *Aquilegia* was found that day.

RANUNCULUS COOLEYAE Vasey & Rose, Contr. U. S. Nat. Herb. 1: 289, pl. xxii (1893); see colored plate in Harriman Alaska Expedition, vol. I: facing page 254.

The finding of this species on the crest of a mountain peak in the extreme southwestern part of the Olympic Mountains has been one of the biggest surprises of the author's career as a botanist. Never will he forget the hard trip of ten long weary miles of mountain trail which began near sea level and wound up and down and around until it reached the summit of Mount Col. Bob at 4750 feet. The trip began before daylight. It soon began to get foggy and all day the lower wooded slopes reminded one of approaching dusk. When the summit was reached, the sun was shining brightly, but everywhere below was a sea of fog and clouds. To the north the crown of Mount Olympus was thrust up through this sea like a rugged enchanted island. Occasionally a great mass of fog would suddenly detach itself from the mass below and come swishing upward to engulf everything for minutes at a time. With the thoughts ever uppermost in mind of the long ten miles back to camp that night, the author went hastily to work to explore the crest, and in a few minutes had picked up the following rare species: *Polystichum Andersoni*, *Poa stenantha*, *Carex circinata*, *Lloydia serotina*, *Thlaspi glaucum*, var. *pedunculatum*, *Pinguicula vulgaris*, *Synthyris schizantha*, and *Erigeron Coulteri* Porter. The *Lloydia* grows in the crevices of cliffs on the northern side, and while the author was collecting this for the first time, a brilliant yellow buttercup attracted his attention. The snow had melted away from the cliff for about twenty feet. Right against the cliff, the buttercup was passing from flower to fruit, and down toward the snow a few feet away, it gradually diminished in stage of growth until it was just coming up where the snow left the ground bare as it receded away from the cliff.

The author hastily gathered a few specimens in different stages and began a reluctant return towards the distant camp. It did not fit into any of the western floras, and I submitted a specimen to Mr. Lyman Benson who is studying the group for Abrams' Illustrated Flora of the Pacific States. His first impression was that it was new to science, but on thorough investigation, he was surprised to find that it was *Ranunculus Cooleyae* of Alaska—but what a jump in range!

It was originally named for Prof. Grace Cooley of Wellesley College who discovered it while spending a vacation at Juneau, Alaska, in 1891. The next year Gen. Funston found it in the St. Elias Alps above Disenchantment Bay. Dr. Greene, that incomparable splitter,

placed it in the genus *Kumlien* with another California buttercup; but conservative botanists prefer to let it remain a *Ranunculus*.

The author's collection, *Thompson* 7236, is the first record of this rare buttercup for the United States.

DICENTRA UNIFLORA Kell. This dainty wee bleeding-heart has a wide range but because it is so small and blooms so early, it is seldom found. Mr. Clarence B. Seely, a promising young collector, found it last spring growing on the precipitous slopes of the picturesque Tumwater Canyon near Leavenworth, Chelan County. Prof. Flett and Mr. Suksdorf report collections from Mount Adams. This collection of Mr. Seely's extends the range considerably northward in this State, and at quite a low altitude of less than 250 meters; it is represented in the author's herbarium as *Seely* 132.

SPIRAEA CINERASCENS Piper. (*Luetkea cinerascens* Heller; *Petrophytum cinerascens* Rydb.). This plant was originally found in the crevices of basaltic cliffs now known as Ribbon Cliff near where the road leaves the Columbia River to pass around the south end of Lake Chelan. It was found by Mr. Elmer in 1897, and not since, as far as the author knows. But in 1932, while driving along the cliff road a few miles north of Wenatchee, great patches of this rare *Spiraea* were found hanging from the bare cliffs. It prefers the shady side of the rocks, but even at that, the sun beats down there in the summer time at a terrific heat of about 130° F. It blooms quite late for such a warm situation, middle of August, and where it gets the moisture to sustain life is a mystery to the author. Its near cousin, *Spiraea Hendersoni*, also grows in the crevices of cliffs, but in a region of dense fogs and winter snows. The collection is *Thompson* 8526.

GEUM RIVALE L. This circumpolar plant has its range given in the North American Flora **22**⁵: 407 as follows: "In swamps and low ground, from Labrador and Newfoundland to New Jersey, Missouri, New Mexico, and British Columbia; also in Europe and Asia." Last summer the author found it growing sparingly in a low alpine meadow between Tonasket and Republic in Okanogan County, *Thompson* 8637, associated with *Petasites sagittata* and *Populus tremuloides*. This is the first record for the State.

ACOMASTYLIS DEPRESSA Greene. The type locality of this plant is Mount Stuart (not Stewart, as in North American Flora **22**⁵: 413), and one of the big thrills of 1931 was to refind this plant several times on various slopes of Mount Stuart. The author was camped on the

western base of the mountain, and when working up the almost perpendicular cliffs, he found a quantity of it growing in the shade of a moist nook at about 6000 feet. Later on in the day it was seen on the dangerous north side in deep shade, and again near the summit where it would have been death to try to reach it. It is a very showy plant when in bloom and reminds one of a cross between a strawberry and a *Potentilla*. The collection was distributed under the name of *Geum Rossii*, the original collection having been cited by Piper¹ as *Sieversia Rossii*. *Thompson* 7628 is the second known collection.

VIOLA SHELDONI Torr. The type was found at Yuba, California. It is common in Jackson and Josephine Counties, Oregon, and Suksdorf found it in the White Salmon Valley, in this State. The author found it growing under the half prostrate branches of *Purshia tridentata* on a warm yellow-pine slope west of Cle Elum, Kittitas County, and *Thompson* 5949 extends the range many miles farther north.

HACKELIA VENUSTA (Piper) St. John. This handsome Borage was found in the granitic slopes of Tumwater Canyon near Leavenworth by Mr. I. C. Otis. Prof. Piper described it as *Lappula venusta*,² but when *Hackelia* was restored, Dr. St. John³ placed it in the right group. Dr. St. John revisited the locality whence it came, but was unable to find it. The author visited the locality on 21 May 1931, and found what he thought at first was a large Phlox, but which turned out to be the above. A large collection was made and sent to the various herbaria. A few weeks later, the author collected it in fruit, collections being *Thompson* 8266 and 8422, both from the exact type locality. Living plants have been sent to the New York Botanical Garden, where it is hoped that it will flourish and be introduced into cultivation in the near future.

CRYPTANTHA THOMPSONII I. M. Johnston, Contr. Arn. Arboretum 3: 88 (1932).

This recently described species is one of several recently published, or in process of being published, and is included here perhaps from vanity on the part of the author; but it is quite a thrill to find such distinctive new species. This plant is another one of the several endemics of the Wenatchee Mountains around Mount Stuart, occurring below obsidian cliffs at the head of Beverly Creek, Mount Stuart region, *Thompson* 7663 and 8742.

¹ Piper. *Flora of Washington*, 344 (1906).

² *Proc. Biol. Soc. Wash.* 37: 93 (1924).

³ *Research Stud. St. Coll. Wash.* 1: 104 (1929).

ERIGERON LONCHOPHYLLUS Hook. Dr. Blake¹ gives the range of this species as "Saskatchewan to British Columbia, Nevada, and Colorado." Prof. M. E. Peck has found it in Oregon, and last summer the author found it in an open boggy creek bottom near Tonasket, Okanogan County, *Thompson* 8665.

ERIGERON ACRIS L., var. ASTEROIDES (Andrzej.) DC. Dr. Blake gives the range for the species as follows: "Quebec to Alaska, southward to New Brunswick, Michigan, Colorado and Utah." Two widely distant places in this State add it to its flora; base of Mt. Angeles, *Thompson*, 7358 and *Fiker* 1079 from Okanogan County.

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THE SPORES OF THE GENUS *LYCOPodium* IN THE UNITED STATES AND CANADA²

L. R. WILSON

(Plates 275-277)

THE occurrence of certain *Lycopodium* spores as fossils in peat has led to the study of the modern spores of this genus in the United States and Canada. The study has shown that the various *distinct* species have characteristic spore types, which make their identification as fossils possible; also it has suggested the use of spores as another criterion of species and a method of determining phylogenetic relationships.

MATERIALS AND TECHNIQUE

The spores studied were secured from fresh mature specimens of most of the American species of *Lycopodium* as well as from herbarium specimens from various parts of the world. Many slides were made of spores of each species and from these typical examples were chosen. A slight variation in size, shape, and pattern is found among the spores of the same species, but this is due mostly to the age of the spores (maturity and storage), the size of the sporanges from which the spores were taken, and the treatment given in preparing them for study. The smallest sporanges of a strobilus often have what appear to be immature or abnormal spores. Severe treatment will often

¹ Contr. U. S. Nat. Herb. 25 (1925).

² Published with aid to RHODORA from the National Academy of Sciences.